

REMARKS

This Amendment is filed in response to the Third Office Action dated November 12, 2009, which has a shortened statutory period set to expire February 12, 2009. A two month extension of time is submitted herewith, thereby allowing Applicant to respond by April 12, 2009.

Claims 1, 3-9, 12-19, 25, 27-30, 32-43, 45, 47-53, 55-62, 64-70, 72-78, And 83-96 Are Patentable Over Schultz and Schulz

Claim 1, as amended, recites in part:

analyzing the intermediate results to construct merged results, the analyzing including:

identifying any first portions of the design that have not been analyzed;

identifying any second portions of the design that have been exhaustively analyzed for all modes/corners; and

identifying any third portions of the design, the third portions of the design being other than the first and second portions, wherein identifying each third portion includes identifying a level of analysis and a set of modes/corners; and

outputting the merged results including metadata regarding the second and third portions.

Applicant respectfully submits that neither Schultz nor Schulz teach the recited identifying and outputting steps. The Examiner cites paragraphs 0027-0029 and 0032-0033 of Schultz as teaching the step of analyzing the intermediate results to construct merged results. Paragraphs 0027-0029 teach that the multipass static timing analysis results, which may include an area of interest, may be displayed using a schematic display tool. Paragraph 0032 teaches that all of the corner cases for analysis are defined in step 210 (see Figure 2). Step 212 then performs the STA for a particular corner case. The results from that STA are saved in step 214. Step 216 determines whether

another corner case has not yet been analyzed for static timing. If so, then STA is performed for that corner case. Paragraph 0033 teaches that the multipass analysis comprises comparing the results of the various corner cases to generate the change in values from one corner case to another. Those components or nodes with high differences may indicate that they are particularly susceptible to potential problems.

The Examiner argues that because multipass analysis is performed in step 218 that the results of this analysis must indicate that all corners have been exhaustively analyzed because otherwise step 216 would be violated. As now clarified and recited in Claim 1, the analysis includes steps neither taught nor appreciated by Schultz. Applicant respectfully submits that the identifying steps recited in Claim 1 allow different levels of analysis for various portions of the design, thereby significantly improving resource management compared to Schultz.

Applicant's analysis of the intermediate results allow the outputted merged results to provide a user a depth of analysis that would not be possible using the combined teachings of Schulz and Schultz. Indeed, the recited outputted merged results including metadata regarding the second and third portions advantageously allow a user to quickly and intelligently make complex decisions in debugging a design.

Because Schulz and Schultz fail to disclose or suggest the recited steps of identifying and its advantages, Applicant requests reconsideration and withdrawal of the rejection of Claim 1.

Claims 3-9 and 12-18 depend from Claim 1 and therefore are patentable for at least the reasons presented for Claim 1. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 3-9 and 12-18.

Claim 19, as amended, now recites in part:

analyzing the intermediate results to construct merged results,

wherein desired information regarding a predetermined set of modes/corners is merged before other information, ... and

wherein the merged results associated with the desired information are user-accessible before the merged results associated with the other information.

The Examiner cites paragraphs 0027-0029 and 0032-0033 as teaching merging a set of modes/corners before other information. Applicant respectfully traverses these characterizations. Paragraphs 0027-0029 teach that the multipass static timing analysis results, which may include an area of interest, may be displayed using a schematic display tool. Paragraph 0032 teaches that all of the corner cases for analysis are defined in step 210 (see Figure 2). Step 212 then performs the STA for a particular corner case. The results from that STA are saved in step 214. Step 216 determines whether another corner case has not yet been analyzed for static timing. If so, then STA is performed for that corner case. Paragraph 0033 teaches that the multipass analysis comprises comparing the results of the various corner cases to generate the change in values from one corner case to another. Those components or nodes with high differences may indicate that they are particularly susceptible to potential problems. Applicant respectfully submits that saving the multipass analysis in step 220 does not disclose or suggest merging desired information regarding a predetermined set of modes/corners before other information.

Applicant notes that paragraph [0034] teaches:

The schematic capture and circuit generation in step 302 is input into the multipass timing analysis of step 304, followed by an area of interest

definition step 306 and the results display of step 308.

FIGURE 3, as described in paragraphs [0034-0038], teaches details of the area of interest definition step 306. Notably, the area of interest definition step 306 follows the multipass static timing analysis step 304. Therefore, all static timing analysis is complete by the time step 306 is performed.

Applicant notes that paragraph [0040] teaches:

[t]he results display of step 408 comprises choosing an area of interest in step 410, choosing the results analysis to display in step 412 and displaying the results graphically in step 414. If another set of results is requested for the area of interest in step 416, the step 412 of choosing results to display is executed. If no more results are requested in step 416, another area of interest may be desired in step 418 and the step 410 of choosing an area of interest is repeated. If no other areas of interest are desired in step 418, the process terminates in step 420.

FIGURE 4, as described in paragraph [0040], teaches details of the results display step 408. Notably, the results display step 408 follows the multipass static timing analysis step 404 and the area of interest definition step 406. Therefore, all static timing analysis is complete by the time step 408 is performed.

Paragraphs [0032] and [0033] teach the details of the multipass static timing analysis steps 304/404 (i.e. steps 210-220, which form the multipass static timing analysis step 204 as shown in FIGURE 2). Paragraph [0032] teaches that:

The multipass timing analysis of step 204 comprises defining all of the corner cases for analysis in step 210, performing the static timing analysis for a particular corner case in step 212, saving the results in step 214, and running another corner case in step 216. If the corner cases are completed in step 216, a multipass analysis is performed in step 218 and saved in step 220.

Paragraph [0033] teaches that the multipass analysis of step 218 comprises comparing the results of the various corner cases to generate the change in values from one corner case to another. Step 220 saves the changes in values at a node.

Applicant respectfully submits that defining areas of interest (FIGURE 3, 306) or determining which area of interest to display first, second, etc. (FIGURE 4) does not disclose or suggest merging **desired information regarding a predetermined set of modes/corners before merging other information.**

Moreover, Shultz fails to disclose or suggest that the merged results associated with the desired information (**regarding the predetermined set of modes/corners**) are user-accessible before the merged results associated with the other information.

Therefore, Applicant requests reconsideration and withdrawal of the rejection of Claim 19.

Claim 25, as amended, now recites in part:

a third set of instructions for analyzing the intermediate results to automatically construct and output merged results, the third set of instructions including:

instructions for identifying any first portions of the design that have not been analyzed;

instructions for identifying any second portions of the design that have been exhaustively analyzed for all modes/corners; and

instructions for identifying any third portions of the design, the third portions of the design being other than the first and second portions, wherein identifying each third portion includes identifying a level of analysis and a set of modes/corners; and

instructions for outputting the merged results including metadata regarding the second and third portions.

Therefore, Claim 25 is patentable for substantially the same reasons presented for Claim 1. Based on those reasons,

Applicant requests reconsideration and withdrawal of the rejection of Claim 25.

Claims 27-30 and 32 depend from Claim 25 and therefore are patentable for at least the reasons presented for Claim 25. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 27-33 and 32.

Claim 33, as amended, now recites in part:

a fourth set of instructions for merging desired information regarding a predetermined set of modes/corners before merging other information, wherein the merged results associated with the desired information are user-accessible before the merged results associated with the other information.

Therefore, Claim 33 is patentable for substantially the same reasons presented for Claim 19. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claim 33.

Claim 34 recites in part:

wherein analyzing the saved intermediate results includes:

identifying any first portions of the design that have not been analyzed;

identifying any second portions of the design that have been exhaustively analyzed for all modes/corners; and

identifying any third portions of the design, the third portions of the design being other than the first and second portions, wherein identifying each third portion includes identifying a level of analysis and a set of modes/corners; and

reporting the merged results including metadata regarding the second and third portions.

Therefore, Claim 34 is patentable for substantially the same reasons presented for Claim 1. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claim 34.

Claims 35-43 depend from Claim 34 and therefore are patentable for at least the reasons presented for Claim 34. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 35-43.

Claim 45, as amended, recites in part:

analyzing the intermediate results to construct merged results, the merged results providing path information at multiple levels of detail, the analyzing including:

identifying any first portions of the design that have not been analyzed;

identifying any second portions of the design that have been exhaustively analyzed for all modes/corners; and

identifying any third portions of the design, the third portions of the design being other than the first and second portions, wherein identifying each third portion includes identifying a level of analysis and a set of modes/corners; and

providing user access to the merged results including metadata regarding the second and third portions.

Therefore, Claim 45 is patentable for substantially the same reasons presented for Claim 1. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claim 45.

Claims 47-53 and 55-61 depend from Claim 45 and therefore are patentable for at least the reasons presented for Claim 45. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 47-53 and 55-61.

Claim 62 recites in part:

analyzing the saved results to construct merged results, the merged results providing analysis coverage that reports parts of the design that are analyzed for each mode and corner as well as parts of the design that are not analyzed for each mode and corner.

The Examiner cites paragraph 0040 of Schultz as teaching this limitation. Applicant respectfully traverses this characterization. Paragraph 0040 teaches that the results display of step 408 comprises choosing an area of interest in step 410, choosing the results analysis to display in step 412, and then displaying the results graphically in step 414. Applicant notes that the "results" taught by Schultz comprise changes in values from one corner case to another. Paragraph 0033. As taught by Schultz, before multipass analysis is performed (as well as before that multipass analysis can be saved), the static timing analysis for all corner cases must be performed. See Figure 2, steps 210-220. Therefore, Schultz cannot disclose or suggest the recited merged results that provide analysis coverage that reports **parts of the design that are not analyzed for each mode and corner**. Therefore, Applicant requests reconsideration and withdrawal of the rejection of Claim 62.

Claims 64-70 and 72-78 depend from Claim 62 and therefore are patentable for at least the reasons presented for Claim 62. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 64-70 and 72-78.

Claim 83 recites in part:

analyzing the intermediate results to construct merged results, the merged results indicating for each path a percentage of times that timing violations exist for all analyzed modes and corners.

The Examiner admits that Schultz and Schulz do not teach this limitation. However, the Examiner cites Ernst as remedying the deficiency of Schulz and Schultz with respect to Claim 83. Applicant respectfully traverses this characterization. Specifically, Section 2 (which includes subsections 2.1, 2.2, and 2.3, and covers over 3 pages of text and figures) teaches

Razor error detection/correction. The idea of Razor is to tune a supply voltage by monitoring the error rate (i.e. speed path failures) during operation. Section 1. According to Ernst in subsection 2.3, a control system works to maintain a constant error rate of E_{ref} . Specifically,

At regular intervals the error rate of the system is measured by resetting an error counter which is sampled after a fixed period of time. The computed error rate for the sample E_{sample} is then subtracted from the reference error rate to produce the error rate differential E_{diff} . E_{diff} is the input to the voltage control function, which sets the target voltage for the voltage regulator. If E_{diff} is negative the system is [experiencing] too many errors, and voltage should be increased. If E_{diff} is positive the error rate is too low and voltage should be lowered. The magnitude of E_{diff} indicates the degree to which the system is "out of tune".

Notably, Ernst fails to disclose or suggest the recited merged results that indicate **for each path a percentage of times that timing violations exist for all analyzed modes and corners**. Therefore, Applicant requests reconsideration and withdrawal of the rejection of Claim 83.

Claims 84-96 depend from Claim 83 and therefore are patentable for at least the reasons presented for Claim 83. Based on those reasons, Applicant requests reconsideration and withdrawal of the rejection of Claims 84-96.

CONCLUSION

Claims 1, 3-9, 12-19, 25, 27-30, 32-43, 45, 47-53, 55-62, 64-70, 72-78, and 83-96 are pending in the present application. Allowance of these claims is respectfully requested.

If there are any questions, please telephone the undersigned at 408-451-5907 to expedite prosecution of this case.

Respectfully submitted,



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